



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,717	08/30/2001	Shin Okamoto	2185-0569P	7140

2292 7590 06/05/2003

BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER

SADULA, JENNIFER R

ART UNIT	PAPER NUMBER
----------	--------------

1756

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/941,717

Applicant(s)

OKAMOTO ET AL.

Examiner

Jennifer R. Sadula

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 5/7/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

The following Office Action is a complete response to the amendment and arguments filed 5/7/03. The Objections to the figures, specification and claims have been overcome.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Ward et al., U.S. Patent No. 6,017,834, (“Ward”).

Ward discloses a monolithic polymer produce having high stiffness and strength comprising a liquid crystalline polyethylene spun material such as the parahydroxybenzoic acid as claimed in Applicants claim 2 (abstract and 4:33). The molecular weight may be anywhere from 50,000 to 3,000,000, depending upon the intended use of the material (3:53-56). Anisotropic properties may be exhibited in the molten state.

Claims 1-2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Takayanagi, U.S. Patent No. 5,690,859, (“Takayanagi”).

Takayanagi teaches a liquid crystalline polymeric composition comprising a wholly aromatic LC polymer, a semi-aromatic LC polymer and a thermoplastic resin wherein the thermoplastic resin is an ultrahigh-molecular-weight polyethylene (5:45). The resin is present in

Art Unit: 1756

an amount satisfying the requirement that A is 0.1 to 90% by weight, B is 80-0.1% by weight, and C is the remainder (5:50-63). The flow temperatures as specified by the examples satisfy the requirements of Applicants claim 3 (7:50-60 and examples 1 to 8).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ward, as applied above in view of Nagashima et al., U.S. Patent No. 6,194,524 ("Nagashima")

Ward discloses a monolithic polymer produce having high stiffness and strength comprising a liquid crystalline polyethylene spun material such as the parahydroxybenzoic acid (PHB) as claimed in Applicants claim 2 wherein the molecular weight may be anywhere from 50,000 to 3,000,000, depending upon the intended use of the material (3:53-56). However, Ward fails to disclose the flow temperature of the resin materials.

Nagashima discloses a thermoplastic resin composition utilizing PHB wherein the high heat-resistant thermoplastic resin has a flow temperature of 150-450°C at 48000 poise (5:14-21). Nagashima fails to disclose the specific MW of the material.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to either test the compositions of Ward for flow temperatures of Nagashima or to utilize materials of Ward having flow temperatures as taught by Nagashima's as Nagashima

Art Unit: 1756

teaches that such provides for superior crack resistance and high heat resistance and both are qualities desired by Ward.

### ***Response to Arguments***

Applicant's arguments filed 5/7/03 have been fully considered but they are not persuasive. The claims are drawn toward a liquid crystal resin composition comprising an ultra high molecular weight polyethylene (mw> 600,000) and an anisotropic LC material in specified proportions. Applicant argues that the teaching of Ward does not disclose an ultra-high MW polyethylene and a LC resin. Ward discloses that the polyethylene (which may be a homo or copolymer of polyethylene) may have an average MW of from 50,000 to 3,000,000 (3:51-63), thereby falling into the category of "ultra-high MW" as specified by the Applicants. Applicants further argue that the composition is a mixture and not a chemical reaction of the components, however such is not specified in the claims.

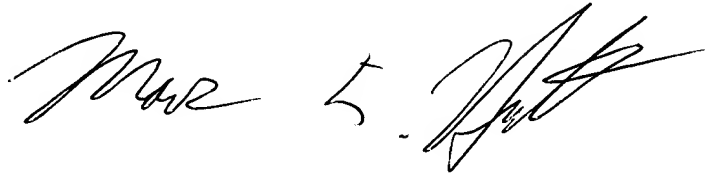
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer R. Sadula whose telephone number is 703.305.4835. The examiner can normally be reached on Monday through Friday, 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff can be reached on 703.308.2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9310 for regular communications and 703.872.9311 for After Final communications.

Art Unit: 1756

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

A handwritten signature in black ink, appearing to read "Mark F. Huff", with a stylized flourish at the end.

**MARK F. HUFF**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**

JRS  
May 28, 2003